Automotive Electrical and Engine Performance 9th Edition
Chapter 32 – MAP and MAF Sensors
Multiple Choice Questions Quiz B

1. What is the main purpose of a manifold absolute pressure (MAP) sensor in an engine?

a. To measure throttle position

b. To monitor air temperature in the intake manifold

c. To compare intake manifold pressure to a perfect vacuum

d. To control ignition timing during acceleration

2. How does a barometric (BARO) sensor differ from a MAP sensor?

a. It senses engine load

b. It measures atmospheric pressure changes directly

c. It calculates intake air density based on vacuum

d. It determines EGR system efficiency

3. What is the function of the hot-wire mass airflow (MAF) sensor?

a. To measure barometric pressure changes

b. To regulate intake manifold pressure

c. To monitor fuel temperature during ignition cycles

d. To calculate air mass entering the engine by sensing air density

4. Which diagnostic method is commonly used to test a MAP sensor?

a. Using a digital multimeter (DMM) or scan tool

b. Back-probing the power and ground wires

c. Conducting a visual inspection of vacuum lines

d. Performing a "tap test" to check for sensor instability

5. What is a key benefit of using a ceramic disc MAP sensor design?

a. Provides high resistance to false air interference

b. Converts pressure into a precise capacitance discharge

c. Simplifies calibration with piezoresistive technology

d. Ensures higher accuracy under turbocharged conditions

6. How does the PCM use the MAP sensor at high altitudes?

a. Adjusts spark timing and reduces fuel delivery

b. Monitors throttle response for optimal ignition timing

c. Compares barometric pressure to manifold vacuum

d. Detects engine wear based on intake pressure

7. What is the normal output voltage range of a GM MAP sensor at idle?

a. 4.0–4.8 volts

b. 1.62–0.88 volts

c. 2.1–1.0 volts

d. 0.5–0.7 volts

8. What is the main function of a MAF sensor's burn-off circuit?

a. To cool the sensing element during high airflow rates

b. To increase air density measurements at low temperatures

c. To keep the sensing wire clean of contaminants

d. To regulate electrical current in the sensor

9. What does a vacuum leak near the MAP sensor cause?

a. Misinterpretation of engine load by the PCM

b. Decrease in voltage signal to the PCM

c. Increase in injector pulse width for rich air-fuel mixture

d. Signal instability in the throttle position sensor

10. What does "false air" refer to in the context of MAF sensor operation?

a. Unmeasured air entering the engine through leaks

b. Air entering the engine at incorrect temperature levels

c. Contaminated air affecting sensor accuracy

d. Airflow disruptions caused by poor sensor placement

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Answer Key Quiz B

Correct Answers:

1. c

2. b

3. d

4. a

5. d

6. c

7. b

8. c

9. a

10. a